Mechanic Falls Quadrangle, Maine

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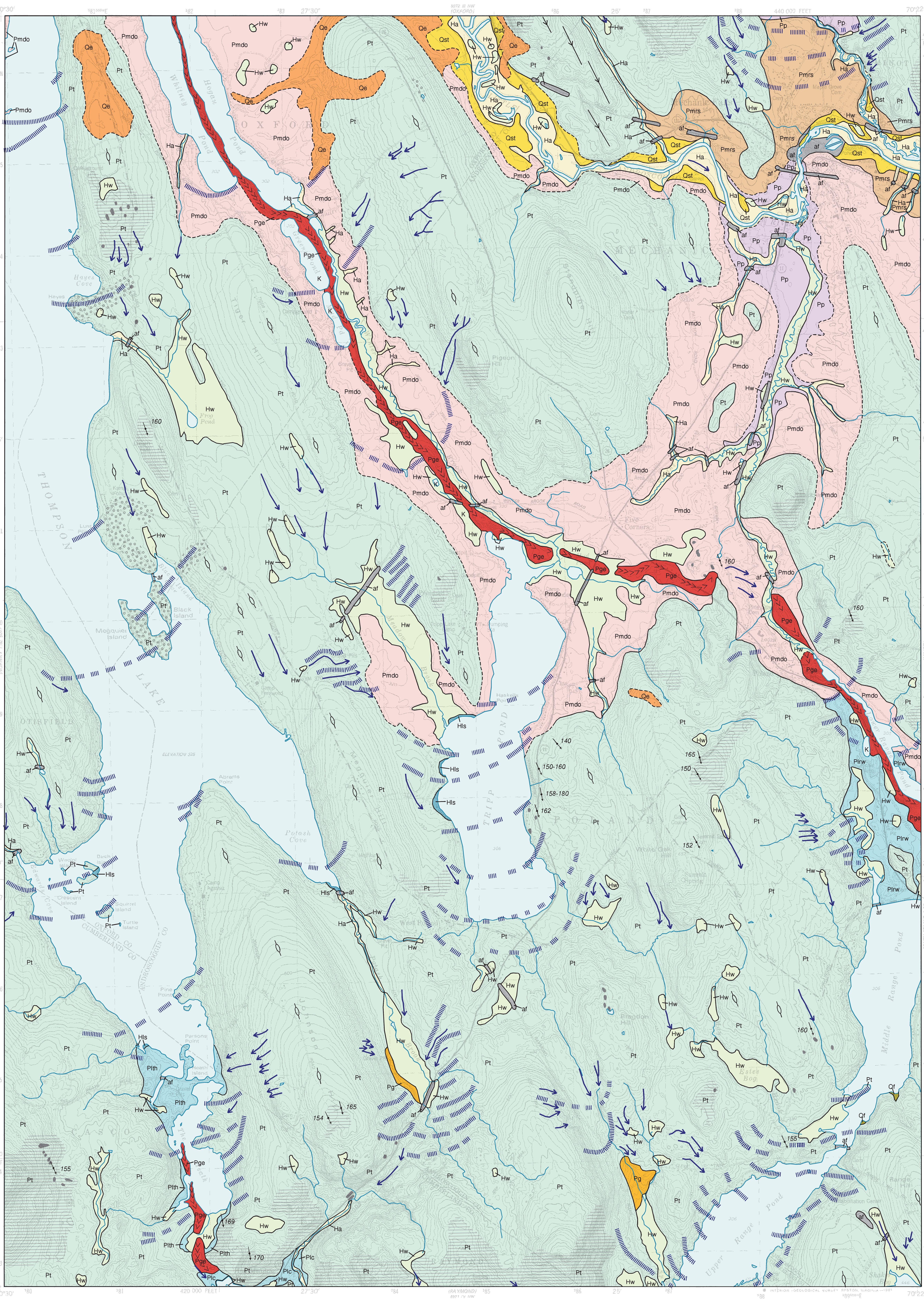
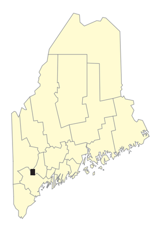
Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping of the Mechanic Falls quadrangle was conducted by Carol T. Hildreth during the 2001 field season. Funding for this work was provided by the U. S. Geological Survey STATEMAP program and the Maine Geological Survey, Department of Conservation.



Quadrangle Location

SCALE 1 : 24,000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 10 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Mechanic Falls quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

NOTE: A very thin, discontinuous layer of windblown sand and silt, generally mixed with underlying glacial deposits by frost action and bioturbation, is present near the ground surface over much of the map area but is not shown.

af — **Artificial fill** - Man-made. May be composed of sand and gravel, till, quarry waste, or sanitary landfill; includes highway and railroad embankments. This material is mapped only where it can be identified using the topographic contour lines. Minor artificial fill is present in virtually all developed areas of the quadrangle. Thickness of fill varies.

Ha — **Stream alluvium** (Holocene) - Sand, silt, gravel, and muck in flood plains along present rivers and streams. As much as 3 m (10 ft) thick. Extent of alluvium indicates most areas flooded in the past that may be subject to future flooding. In places, this unit is indistinguishable from, grades into, or is interbedded with freshwater wetlands deposits (Hw), especially in the Little Androscoggin River flood plain.

Hw — **Freshwater wetland deposit** (Holocene) - Muck, peat, silt, and sand. Generally 0.5 to 3 m (1 to 10 ft) thick. In places, this unit is indistinguishable from, grades into, or is interbedded with stream alluvium (Ha), especially in the Little Androscoggin River flood plain and its larger tributaries.

Hls — **Modern lakeshore deposit** (Holocene) - Sand and/or gravel with silt in places. Developed along the present and prehistoric shorelines of lakes and ponds. Most extensive and thickest on larger lakes; 0.5 to 2 m (1 to 6 ft) thick. Includes spit deposits.

Qst — **Stream terrace deposit** (Holocene and Late Pleistocene) - Sand, silt, gravel, and occasional muck on terraces cut into glacial deposits in the Little Androscoggin River valley. These terraces formed in part during late-glacial time as sea level regressed. From 0.5 to 5 m (1 to 15 ft) thick.

Qf — **Alluvial fan deposits of the Range Ponds area** (Holocene and Late Pleistocene) - Sand, silt, gravel, and occasional muck at the mouths of streams draining Range Hill into the Range Ponds. From 0.5 to 2 m (1 to 7 ft) thick.

Qe — **Eolian deposit** (Pleistocene) - Fine- to medium-grained, well-sorted sand. Found as small dunes on a variety of older glacial deposits. Deposited after late-glacial sea level regressed from the area and left fine-grained sandy marine sediments exposed to wind erosion and transport before vegetation established itself and anchored the deposits. Most are found blanketing the eastern sides of valleys, which indicates they were deposited by prevailing westerly winds. Some dunes may have been active in postglacial time. Thickness varies from 0.5 to 8 m (1 to 25 ft).

Pmrs — **Marine regressive sand deposits** (Pleistocene) - Sand and minor gravel. Consists of reworked marine delta and outwash materials graded by streams to falling sea level during late-glacial time. As much as 3 m (10 ft) thick.

Pmdo — **Glaciofluvial and glaciomarine deposits of the Little Androscoggin River valley** (Pleistocene) - Sand, silt, gravel, and mud. Consists of delta deposits graded to the contemporary sea. In places, overlain by unmapped thin dune deposits. Thickness varies: 0.5 to 15 m (1 to 50 ft).

Pp — **Presumpscot Formation: Glaciomarine bottom deposits** (Pleistocene) - Silt and clay with local sandy beds and lenses. Consists of late-glacial fine-grained (marine mud) sea-floor deposits. Commonly lies beneath surface deposits of units Pmdo or Pmrs. For example, 20 m (66 ft) of this unit lies beneath 8 m (26 ft) of sand of the Pmdo unit just east of Hogan Pond in the northwest corner of the map. In places, may be overlain by unmapped thin dune deposits. As much as 20 m (66 ft) thick.

Plrw — **Glaciolacustrine deposits of the Lower Range and Worthley Ponds area** (Pleistocene) - Predominantly sand and gravel laid down in contact with and beyond glacial ice as kame-delta, subaqueous fan, and lake-bottom deposits graded to the southeast over ice and drift dams in the Lower Range and Worthley Ponds basins in the Minot quadrangle. As much as 12 m (40 ft) thick.

Pg — **Undifferentiated glacial deposits of Potash Bog and Cleve Tripp Road area (Pleistocene)** - Sand, silt, and gravel. Consists of thin glaciofluvial outwash and/or ice-contact deposits. Thickness varies from 0 to 3 m (0 to 10 ft).

Pge — **Esker deposits** (Pleistocene) - Sand and gravel deposited by glacial meltwater flowing in tunnels within or beneath the ice. As much as 39 m (130 ft) thick. Chevrons indicate direction of stream flow.

Plth — **Glaciolacustrine deposits of The Heath area** (Pleistocene) - Predominantly sand, gravel, and silt laid down in contact with or beyond glacial ice as kame-delta, subaqueous fan, and lake-bottom deposits graded to a 370 - 380 foot elevation col near the south edge of the map. Thickness varies from 0.5 to 11 m (1 to 35 ft).

Plc — **Glacial Lake Crescent deposits** (Pleistocene) - Predominantly sand and gravel laid down as ice-contact, deltaic, and outwash deposits graded to drift dams which blocked meltwater drainage in the southern end of the Crescent Lake valley in the Raymond quadrangle to the south. Equivalent to units Plc_5 and Plc_6 of Retelle (1997). Thickness varies from 0.5 to 8 m (1 to 25 ft).

Pt — **Till** (Pleistocene) - Light- to dark-gray, nonsorted to poorly sorted mixture of clay, silt, sand, pebbles, cobbles, and boulders; a predominantly sandy diamicton containing some gravel. Generally underlies most other deposits. Thickness varies and generally is less than 6 m (20 ft), but is probably more than 30 m (100 ft) under many drumlins and streamlined hills. Many streamlined hills in this area are bedrock-cored.

Bedrock exposures. Not all individual outcrops are shown on the map. Gray dots indicate individual outcrops; ruled pattern indicates areas of abundant exposures and areas where surficial deposits are generally less than 3 m (10 ft) thick. Mapped in part from aerial photography, soil surveys (Hedstrom, 1974; McEwen, 1970; and Wilkinson, 1995), and previous geologic maps (Hanley, 1959; Prescott, 1968).

Contact - Boundary between map units. Dashed where approximate.

Channel eroded by glacial meltwater or meteoric water flow over outwash or till deposit. Arrow indicates direction of flow.

135 Glacial striation. Point of observation is at dot. Number indicates azimuth (in degrees) of former ice-flow direction.

Drumlin or other glacially streamlined hill. Symbol is parallel to direction of glacial ice movement.

Area of many large boulders.

Inferred approximate ice-frontal position at time of deposition of meltwater deposits.

>>>>> Esker crest - Chevrons point in direction of glacial meltwater flow.

K Kettle hole - Depression left by melting of glacial ice.

Fluted till surface - Symbol shows axis of a long narrow ridge carved in till by flow of glacial ice.

REFERENCES

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USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

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2. Locke, D. B. and Hildreth, C. T., 2001, Surficial materials of the Mechanic Falls quadrangle, Maine: Maine Geological Survey, Open-File Map 01-482.
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